IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Mail Stop: Appeals, Alexandria VA 22313-1450 on February 10, 2006.

Mary Ann Copas, Secretary

In the Application of Wolfgang Peter et al

Ser.No.:	09/651,797
Filed:	August 30, 2000
For:	METHOD AND APPARATUS FOR TREATMENT OF METALLIC WORKPIECES
Art Unit:	1742
Examiner:	Sikyin Ip
Customer #:	30996

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

MAIL STOP: APPEAL BRIEF - PATENTS

RESPONSE TO OFFICE COMMUNICATION OF JAN 10 2006

Sir:

Appellant hereby appeals to the Board of Patent Appeals and Interferences from the decision dated July 14, 2004 of the Examiner finally rejecting claims 6 - 20.

1. According to the requirements of CFR 1.192, appellant herewith encloses an Appeal Brief in triplicate.

2. The fee of $500.00 in payment for filing such Appeal Brief was paid on December 14, 2004.

3. Appellant does not wish to arrange an oral hearing for this appeal.

4. In response to the Office Communication of JAN 10 2006, the following information is provided, beginning on page 2 of this paper.

COMMENTS

Appellant submits herewith a Substitute Appeal Brief as required by the Office Communication of Jan 10 2006.

The following amendments were made to bring the Appeal Brief into compliance with 37 CFR § 41.37(c).

Page 1, "APPELLANT'S APPEAL BRIEF" was changed to read "APPELLANT'S SUBSTITUTE APPEAL BRIEF".

Page 2, "SUMMARY OF THE INVENTION" was deleted and replaced with the following heading, "SUMMARY OF CLAIMED SUBJECT MATTER".

Page 5, "ISSUE" was deleted and replaced with the following heading, "GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL".

Page 12, "(9) Claims Appendix" was amended to read "(8) Claims Appendix".

Page 15 was added to incorporate the required page for "(9) Evidence Appendix". As noted on page 15, there is no evidence submitted with the Brief.

Page 16 was added to incorporate the required page for "(10) Related Proceedings Appendix". As noted on page 16, there are no related proceedings.

Appellant has attempted to be fully responsive to the outstanding Office Communication. However, should additional information or modifications be required, the undersigned would would very much appreciate a telephone call in order to expedite review of the Appeal Brief.

Respectfully Submitted,

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For: METHOD AND APPARATUS FOR TREATMENT OF METALLIC WORKPIECES

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Examiner: Sikyin Ip

Commissioner for Patents

Alexandria, VA 22313-1450

APPELLANT'S SUBSTITUTE APPEAL BRIEF

Dear Sir:

The Appellant submits the following for its Brief on Appeal and respectfully requests consideration of same. The Appellant requests withdrawal of the rejections made and that the Application be placed in line for Allowance.

(1) REAL PARTY IN INTEREST

The real party in interest is the assignee, Ipsen International GmbH.

(2) RELATED APPEALS AND INTEREFERENCES

There are no Appeals or Interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

(3) STATUS OF CLAIMS

Claims 6 and 8-20 are pending in the application and have been finally rejected. Claims 1 - 5 have been withdrawn from consideration as being drawn to a non-elected invention and claim 7 has been cancelled.

(4) STATUS OF AMENDMENTS

In response to the final rejection dated July 14, 2004, a Notice of Appeal was submitted on October 14, 2004. No amendment has been filed subsequent to the Final Rejection dated July 14, 2004.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

As stated in independent claim 6, the present invention provides an apparatus for the thermal treatment of metallic work pieces or a plurality of stacks formed of metallic work pieces arranged one above the other. The apparatus recited in claim 6 comprises a quenching chamber 10 (reference is had to the specification of the present application at Page 8, lines 14 - 18 and Figures 1 and 2) for receiving pre-heated work pieces 20 (reference is had to the specification of the present application at Page 8, lines 15 – 18 and Figures 1 and 2), a quenching gas for cooling the same, and guide channels 30 (reference is had to the specification of the present application at Page 9, lines 13 – 19 and Figures 1, 2, 3, 3a, 4, and 4a) each for guiding a directed flow of quenching gas about a respective one of the work

pieces 20 individually or a stack of the work pieces 20. Each of the guide channels 30 has a closed lateral surface and a length that corresponds at least to a height of the respective individual or stacked work pieces 20 (reference is had to the specification of the present application at Page 10, lines 1 – 4 and Figure 3). Also, claim 6 recites that each of the guide channels 30 surrounds a respective one of the individual work pieces 20 or the stacks of the work pieces 20 along a direction of flow of the quenching gas such that the respective guide channel 30 guides the quenching gas to flow longitudinally past the respective one of the individual work pieces 20 or the stacks of the work pieces 20 (reference is had to the specification of the present application at Page 9, lines 15 – 17 and Figures 1, 2, 3, 3a, 4, and 4a). Furthermore, claim 6 recites a quenching gas closed loop circulation assembly associated with the quenching chamber for circulating the quenching gas along a closed loop circulation path through the quenching chamber.

The guide channels 30 of the apparatus recited in claim 6 advantageously guide the quenching gas in an individual manner around each work piece 20 in a substantially laminar flow which promotes intense and uniformed quenching of the work pieces. Since each work piece 20 to be quenched is enclosed by a respective one of the guide channels 30, the directed flow of quenching gas flowing through the respective guide channel 30 cannot influence and, thus, generate turbulence with, the directed flows of quenching gas flowing through the adjacent guide channels 30 (reference is had to the specification of the present application at Page 5, lines 12 – 17 and Figures 1 and 2).

As further provided in claim 8, the length of the guide channels 30 projects beyond a height of the individual or stacked work pieces 20 by an amount equal to

half of a diameter or width of the work pieces (reference is had to the specification of the present application at Page 10, lines 1 - 5). As further provided in claim 9, the guide channels 30 have a cylindrical shape or are adapted to the geometry of the work pieces 20 to be cooled (reference is had to the specification of the present application at Page 9, line 20 to Page 10, line 1 and Figures 4 and 4a).

As stated in Independent claim 17, the present invention provides an apparatus for the thermal treatment for metallic work pieces 20 including a quenching chamber 10 for receiving pre-heated work pieces 20 and a quenching gas for cooling the same and means for guiding individual substantially laminar flows of quenching gas around the work pieces 20 in a manner such that each respective individual flow of quenching gas around a respective one of the work pieces 20 remains out of contact with the other respective individual flows of quenching gas during its flow around the respective work piece 20, wherein each individual flow of quenching gas is substantially laminar due to the absence of turbulence-generating mixing which would otherwise occur if the flows of quenching gas were not prevented from mixing with one another (reference is had to the specification of the present application at Page 5, lines 12 – 17 and Figures 1 and 2). Additionally, claim 17 recites that the means for guiding individual substantially laminar flows of quenching gas includes a plurality of guide channels 30 each having a closed lateral surface and being disposable in surrounding relationship around a respective one of the work pieces 20 for directing a substantially laminar flow of quenching gas around the respective work piece 20.

The apparatus recited in claim 17 advantageously guides the quenching gas in an individual manner around each work piece 20 in a substantially laminar flow

that promotes intense and uniform quenching of the work pieces 20. Since the apparatus recited in claim 17 includes means for guiding individual substantially laminar flows of quenching gas around the work pieces 20 in a manner such that each respective individual flow of quenching gas around a respective one of the work pieces 20 remains out of contact with the other respected individual flows of quenching gas during its flow around the respective work piece 20, each directed flow of quenching gas flowing through a respective piece cannot influence and, thus, generate turbulence with, the directive flows of quenching gas flowing past the other work pieces 20.

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 6 - 20 are unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3?

The Examiner has indicated that claims 6 - 20 are are unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3. However, as will be explained in greater detail hereinafter, it is respectfully submitted that the single applied reference G9400222.3 neither teaches nor discloses the apparatus recited in independent claim 6, any of claims 8 - 16 dependent therefrom, the method recited in independent claim 17, or any of claims 18 - 20 dependent therefrom.

(7) ARGUMENT

As indicated previously, the present invention provides an apparatus for the thermal treatment of metallic work pieces or a plurality of stacks formed of metallic work pieces arranged one above the other, wherein the apparatus comprises a quenching chamber for receiving pre-heated work pieces, a quenching gas for

cooling the same, and guide channels each for guiding a directed flow of quenching gas about a respective one of the work pieces individually or a stack of the work pieces.

The Examiner has rejected Claim 6 and claims 8 - 16 dependent therefrom, as well as claim 17 and claims 18 - 20 dependent therefrom, as being unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3. In support of the rejections of these claims, the Examiner asserts that the single applied reference G9400222.3, in Figure 1, discloses a cooling chamber with nozzle plates (10) and cooling plates (11). The nozzle plates can be lowered onto the pieces positioned in the cooling chamber (in the Final Rejection dated 07/14/2004, reference is had to Page 4, last paragraph, of the English translation of the single applied reference G9400222.3). The nozzle plate (10) is placed at the top of the workpieces to make cooling gas flow in the lengthwise direction and [there is] no rebounding flow, which, according to the Examiner, reads on laminar cooling. The cooling plates (11) are formed to a contour of the work piece loads such as a tunnel (reference is had in the Final Rejection dated 07/14/2004 to Page 4, second full paragraph, of the English translation of the single applied reference G9400222.3). Cooling gas is regenerated by passing through gas channels (in the Final Rejection dated 07/14/2004, reference is had to Page 2, second full paragraph, of the English translation of the single applied reference G9400222.3). When prior art compounds essentially "bracketing" the claimed compounds (here, the structure) in structural similarity are all known, one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar properties (case citations omitted).

Additionally, the Examiner notes that Figure 2 of the single applied reference G9400222.3 uses lateral nozzle plates (10) having the cooling gas flow in rebounding flow (in the Final Rejection dated 07/14/2004, reference is had to Page 6, first full paragraph, of the English translation of the single applied reference G9400222.3). But, alleges the Examiner, when the nozzle plate (10) is placed above the workpiece (4), the cooling gas would flow in the lengthwise direction without rebounding. Thus, according to the Examiner, when the nozzle plates are placed above the workpieces, the cooling gas flow is without rebounding and reads on laminar flow.

Appellant submits that the apparatus, as set forth in either of the two finally rejected independent claims 6 and 17, is neither taught nor disclosed by the single applied reference G9400222.3 and, thus, the two finally rejected independent claims 6 and 17, and the claims respectively dependent therefrom, are not unpatentable over the single applied reference G9400222.3. The apparatus of the present invention is a solution to the challenge of providing an apparatus for the thermal treatment of metallic workpieces that can, to the greatest extent possible, prevent the occurrence of uneven thermal treatment of such metallic workpieces, as such uneven thermal treatment disadvantageously leads to undesirable non-uniform shrinkage of the metallic workpieces. The inventive apparatus of the present invention offers a solution in that the inventive apparatus provides substantially laminar flows of quenching gas around each respective workpiece as opposed to providing turbulent, non-laminar flows of quenching gas that would otherwise more intensely cool, in a random manner, certain portions of a workpiece than other portions of the workpiece, thus leading to individual, non-uniform cooling regimes for

each workpiece relative to the other workpieces. A key structure of the inventive apparatus that effects the desirable substantially laminar flows of quenching gas around each respective workpiece is the means that is disposable in surrounding relationship around each respective workpiece.

In view of the problem addressed by the apparatus of the present invention - namely, the problem of non-uniform heating of a group of workpieces due to turbulent, non-laminar flows of quenching gas, it is submitted that there must be some teaching or motivation in the prior art to lead one of ordinary skill in the art to refer to the single applied reference G9400222.3. However, Appellant submits that the single applied reference G9400222.3 itself fails to provide any such teaching or motivation. The single applied reference G9400222.3 discloses at least two embodiments of a quenching device wherein each disclosed embodiment deliberately includes a structure that produces turbulent, non-laminar flows of quenching gas. Specifically, with respect to the embodiment of Figure 1 of the single applied reference G9400222.3, as set forth on Page 6 of the translation thereof, this embodiment includes nozzle plates (10) each of which directs a flow of quenching gas onto a respective workpiece (4) such that turbulent flow inherently results. The cooling plates (11) of the embodiment of Figure 1 of the single applied reference G9400222.3 cannot transform the flows of quenching gas injected through the nozzles of the nozzle plates (10) from turbulent flows into (substantially) laminar flows. The single applied reference G9400222.3 does not itself even hint at the desirability of having the nozzle plates (10) provide such a laminar flow-promoting purpose; instead, the single applied reference G9400222.3 specifically discloses that the nozzle plates (10) are instead provided for the purpose of optimizing the cooling

of the workpiece (4) by, for example, having the nozzle plates (10) serve as heat-exchange surfaces close to the workpiece surfaces.

With regard to the argument advanced to support the final rejection of claims 6 and 8 - 20 of the present application that each cooling plates (11) of the single applied reference G9400222.3 is formed as a "tunnel" that individually surrounds a respective workpiece (4) is an incorrect argument for the reason that the single applied reference G9400222.3 does not, in fact, teach or suggest any such individual "tunnel" structure. This can be seen, for example, by examining the structure disclosed on page 4 of the English translation of the single applied reference G9400222.3. On that page 4, it is disclosed that, in the case of long slender parts such as borer blanks, a "tunnel" can be formed, in which the upper plate sections form nozzle plates while the plate sections at the sides form cooling plates. However, the single applied reference G9400222.3 provides no hint that this "tunnel" is a tunnel for surrounding an individual workpiece (4) or, instead, is a tunnel for enclosing a plurality of workpieces (4) that are to be cooled. In fact, page 5, second full paragraph, of the English translation of the single applied reference G9400222.3 states that the nozzle and cooling plates 10, 11 or the combination Plate 12 (with respect to the other embodiment of the English translation of the single applied reference G9400222.3) are inserted into the cooling chamber on lateral guide rails. This is a clear indication that the term "tunnel" in the single applied reference G9400222.3 refers to a tunnel for enclosing a plurality of workpieces (4), as it would otherwise not be possible, if the cooling plates 11 were instead in the form of individual tunnels, to insert the cooling plates 11 into the cooling chamber on the lateral guide rails, for the reason that the lateral movement of the individually tunnel-

configured cooling plates 11 along the lateral guide rails would then be blocked by the first row of the workpieces 4.

In view of the fact that there is no teaching or hint in the single applied reference G9400222.3 of the desirability of reducing or completely suppressing turbulence generating flow around an individual work piece 4 and, moreover, in view of the fact that the single applied reference G9400222.3 specifically discloses a structure (the nozzle plate (10)) that, in fact, produces a turbulent flow, it is submitted that one of ordinary skill in the art would have no motivation to turn to the single applied reference G9400222.3 in solving the problem addressed by the apparatus of the present invention. Additionally, even if there were some motivation for one of ordinary skill in the art to turn to the single applied reference G9400222.3 in solving this problem, the structures disclosed in the single applied reference G9400222.3 simply do not overcome this problem.

Thus, Appellant submits that the apparatus recited in either of the two finally rejected independent claims 6 and 17 is neither taught nor disclosed by the single applied reference G9400222.3. Thus, a rejection of claim 6, and Claims 8-16 depending from claim 6, cannot properly be based upon the single applied reference G9400222.3. Additionally, a rejection of Claim 17, and Claims 18-20 depending from Claim 17 cannot properly be based upon the single applied reference G9400222.3.

In view of the foregoing discussion, it is respectfully requested that the Honorable Board of Patent Appeals and Interferences overrule the final rejection of Claims 6 and 8-20 over the cited art, and hold that the Appellant's claims be allowable over such art.

In view of the foregoing discussion, it is respectfully requested that the Honorable Board of Patent Appeals and Interferences overrule the final rejection of claims 6 and 8 - 20 over the cited art, and hold that Appellant's claims be allowable over such art.

Respectfully Submitted,

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(8) Claims Appendix

Listing of Claims as Last Amended:

1 – 5 - withdrawn

6. An apparatus for the thermal treatment of metallic workpieces or a plurality of stacks formed of metallic workpieces arranged one above the other, said apparatus comprising:

a quenching chamber for receiving preheated workpieces and a quenching gas for cooling same;

guide channels each for guiding a directed flow of quenching gas about a respective one of said workpieces or said stacks of said workpieces, wherein each of said guide channels has a closed lateral surface and a length that corresponds at least to a height of the respective individual or stacked ones of said workpieces and each of said guide channels surrounds a respective one of said individual workpieces or said stacks of said workpieces along a direction of flow of said quenching gas such that the respective guide channel guides said quenching gas to flow longitudinally past the respective one of said workpieces or said stacks of said workpieces; and

a quenching gas closed loop circulation assembly associated with said quenching chamber for circulating said quenching gas along a closed loop circulation path through said quenching chamber.

7. (cancelled)

8. An apparatus according to claim 6, wherein the length of said guide channels projects beyond a height of said individual or stacked workpieces by an amount equal to half of a diameter or width of said workpieces.

9. An apparatus according to claim 6, wherein said guide channels have a cylindrical shape or are adapted to the geometry of said workpieces that are to be cooled.

10. An apparatus according to claim 9, wherein said guide channels are cylindrical, having a circular, square or polygonal cross-section.

11. An apparatus according to claim 6, wherein said guide channels are interconnected to form a channel system.

12. An apparatus according to claim 6, which includes means for displacing said guide channels in said quenching chamber.

13. An apparatus according to claim 12, wherein said guide channels are replaceable.

14. An apparatus according to claim 6, wherein said quenching chamber is provided with an inlet for said quenching gas, wherein said inlet rests sealingly against said guide channels.

15. An apparatus according to claim 6, wherein said guide channels are made of a heat-resistant material.

16. An apparatus according to claim 15, wherein said guide channels are made of steel, iron alloys or nickel alloys.

17. An apparatus for the thermal treatment of metallic workpieces, said apparatus comprising:

a quenching chamber for receiving preheated workpieces and a quenching gas for cooling same; and

means for guiding individual substantially laminar flows of quenching gas around said workpieces in a manner such that each respective individual flow of quenching gas around a respective one of said workpieces remains out of contact with the other respective individual flows of quenching gas during its flow around the respective workpiece, wherein each individual flow of quenching gas is substantially laminar due to the absence of turbulence-generating mixing which would otherwise occur if the flows of quenching gas were not prevented from mixing with one another, said means for guiding individual substantially laminar flows of quenching gas including a plurality of guide channels each having a closed lateral surface and being disposable in surrounding relationship around a respective one of said workpieces for directing a substantially laminar flow of quenching gas around the respective workpiece.

18. An apparatus according to claim 17, wherein said guide channels have a length that corresponds at least to a height of individual or stacked ones of said workpieces.

19. An apparatus according to claim 18, wherein the length of said guide channels projects beyond a height of said individual or stacked workpieces by an amount equal to half of a diameter or width of said workpieces.

20. An apparatus according to claim 17, which includes means for displacing said guide channels in said quenching chamber.

(9) EVIDENCE APPENDIX

None.

(10) RELATED PROCEEDINGS APPENDIX

None.